CLAIMS

What is claimed is:

1. In a pump having a rotary portion which compels the movement of a fluid by peristaltic compression of resilient tubing containing the fluid, a roller assembly comprising the following:

at least one roller mounted in the rotary portion of the pump for contact with the resilient tubing, the at least one roller having a range of rotation in contact with the tubing during pump operation; and

a roller control mechanism adapted and constructed to stop the at least one roller at a single, predetermined location on the tubing when the pump operation is stopped.

2. A roller assembly in accordance with claim 1, wherein the at least one roller comprises two rollers.

3. A roller assembly in accordance with claim 2, wherein the rollers are spaced apart circumferentially such that the rollers trap a consistent quantity of fluid between them during operation of the pump.

4. A roller assembly in accordance with claim 1, wherein the rotor control mechanism comprises a slip clutch on which the rotors are mounted.

5. A roller assembly in accordance with claim 2, further comprising a control mechanism is adapted and constructed to cause one of the rollers to stop at a bottom position thereof.

6. A roller assembly in accordance with claim 5, wherein the roller control mechanism comprises a stop-pin and stop bar arrangement.

7. A roller assembly in accordance with claim 2, further comprising a flow control mechanism adapted and constructed to compensate for localized tubing collapse at the roller stop position.

8. In a pump having a rotary portion which compels the movement of a fluid by peristaltic compression of resilient tubing containing the fluid, a roller assembly comprising the following:

a pair of rollers mounted at circumferentially spaced-apart positions in the rotary portion of the pump for contact with the resilient tubing, the rollers having a range of rotation in contact with the tubing during pump operation; and

a roller control mechanism adapted and constructed to stop one of the rollers of the pair of rollers at a single, predetermined location on the tubing when the pump operation is stopped.

9. A roller assembly in accordance with claim 8, wherein the rollers are mounted 180° from one another.

10. A roller assembly in accordance with claim 9, further comprising a pump occlusion spaced from the rollers such that the rollers trap a consistent quantity of fluid between them during operation of the pump.

11. A roller assembly in accordance with claim 8, wherein the rotor control mechanism comprises a slip clutch on which the rotors are mounted.

12. A roller assembly in accordance with claim 9, wherein the rotor control mechanism is adapted and constructed to cause one of the rollers to stop at a bottom position thereof.

13. A roller assembly in accordance with claim 12, wherein the rotor control mechanism comprises a stop-pin and stop bar arrangement.

14. A roller assembly in accordance with claim 9, further comprising a flow control mechanism adapted and constructed to compensate for localized tubing collapse at the roller stop position.

15. A method for operating a pump having a rotary portion which compels the movement of a fluid by peristaltic compression of resilient tubing containing the fluid comprising the following:

mounting at least one roller in the rotary portion of the pump for contact with the resilient tubing, the at least one roller having a range of rotation in contact with the tubing during pump operation;

operating the pump by rotating the roller; and

stopping the roller by using a roller control mechanism to stop the at least one roller at a single, predetermined location on the tubing when the pump operation is stopped.

16. A method in accordance with claim 15, further comprising mounting the at least one roller comprises mounting two rollers.

17. A method in accordance with claim 16, further comprising mounting the rollers to be spaced apart circumferentially, thereby trapping a consistent quantity of fluid between the rollers during operation of the pump.

18. A method in accordance with claim 15, further comprising mounting the rollers on a slip clutch.

19. A method in accordance with claim 16, further comprising stopping one of the rollers to stop at a bottom position thereof.

20. A method in accordance with claim 16, further comprising compensating for localized tubing collapse at the roller stop position via a flow control mechanism.